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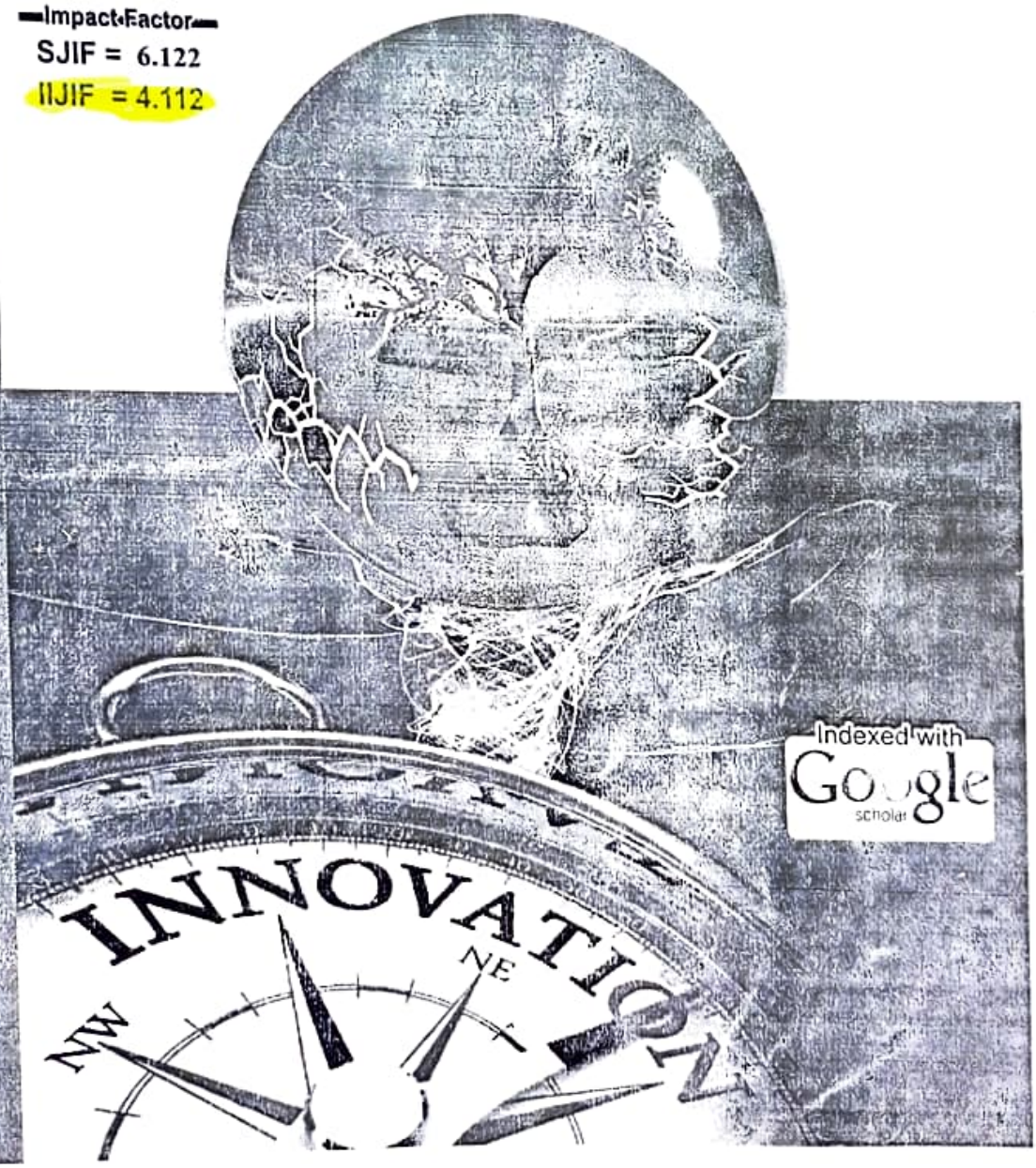

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Difference Operator Approach To Evaluate Integrals Involving Multiple Hypergeometric Functions Of Several Variable With Respect To Parameters

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Abstract

In the present paper, making an appeal to difference operators, we evaluate certain integrals involving multiple hypergeometric functions of Chandel-Gupta (1986), Exton (1972,76), Karlsson (1986), Chandel and Gupa (2007) with respect to parameters. We also apply same technique to evaluate integrals involving hypergeometric functions of four variables due to Sharma and Parihar (1989).

2010 Mathematical Subject Classification : 33C50

Keywords: Difference operator E_a , Lauricella's Multiple hypergeometric functions, Appell's hypergeometric functions, Intermediate Lauricella multiple hypergeometric functions due to Karlsson.

Introduction

Recently, making an appeal to difference operator E_a defined by

$$(1.1)\quad E_a f(\alpha)=f(\alpha+1), E_a^n(f(\alpha))=f(\alpha+n),$$

and integral due to Erdélyi [5,p.224]

$$(1.2)\quad \int_{-\infty}^{\infty}\frac{\sin[(m+1)\pi x]dx}{\sin\pi x\,\Gamma(\alpha_1+x)\Gamma(\alpha_2-x)}=\frac{2^{\alpha_1+\alpha_2-2}}{\Gamma(\alpha_1+\alpha_2-1)},\quad Re(\alpha_1+\alpha_2)>1,$$

Joshi and Bhati [, *J̃nānāha* 27 (1997)] evaluated some integrals involving hypergeometric functions of three and four variables and discussed some special cases.

Recently, making an appeal to difference operators Chandel [2003 presented in ISAAC Congress 2003, York Univ. Toronto Canada] obtained various transformations of multiple hypergeometric functions of several variables due to Chandel-Gupta [, *J̃nānāha* 16 (1986)], Chandel-Vishwakarma [, *J̃nānāha* 19 (1989)] and discussed their interesting special cases.

In the present paper, making an appeal to difference operators, we evaluate certain interesting integrals involving multiple hypergeometric functions of several variables $F_A^{(n)}, F_C^{(n)}$ including Intermediate Lauricella's multiple hypergeometric functions and confluent form of Lauricella [16].

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